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ABSTRACT

Since 1977, the Department of Medicine at the University of Saskatchewan, Canada, has participated in adult fitness and recreation instruction at the College of Education. The department has offered two programs for selected students: (1) a formal course and practicum in cardiac rehabilitation for selected students; and (2) a summer studentship in cardiac rehabilitation and exercise cardiology. A third program was initiated as part of the regular course in adult fitness. The current programs are detailed, and possible pitfalls are discussed. (JD)

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Medicine and Physical Education: A Successful Education Experiment

The training of Physical Education students in North America has most often concentrated on the needs and aspirations of others much like themselves - young, active, athletic and healthy - inaccurate descriptors of most of our society. Several recent trends have made it desirable for Physical Education students and practitioners to be familiar with the problems of aging, disability, disease and their interactions with physical activity:

1) An aging population with a correspondingly higher prevalence of disability and disease of varying degree. 2) An increasing awareness in persons of all ages of the benefits of regular physical activity as part of a healthful lifestyle. 3) An increasing awareness of the utility of physical activity as a method of secondary prevention and rehabilitation (or even in the treatment) of certain medical conditions. 4) An increasing demand by disabled persons to participate more fully in a wider range of activities than previously thought feasible for them.

Thus, there is an increased demand for exercise and recreation leaders with training and skills appropriate to these special needs. Clearly, an interdisciplinary approach is required to prepare individuals for exercise counselling of patients with chronic disease or impairment. It was with these considerations in mind that in 1977, the College of Physical Education at the University of Saskatchewan asked the Department of Medicine to participate in its Adult Fitness and Exercise Management course. Specifically, the Department of Medicine was asked to deal with ischemic heart disease, an important lifestyle issue, and the rehabilitation of patients suffering from this disorder.

The programs that we are about to describe have utilized the facilities of the Colleges of Physical Education and Medicine at the University of Saskatchewan, the University Hospital, and the Saskatoon Tri-Hospital Cardiac Rehabilitation Program. The contents of this portion of the course are shown in Table I.

Since the Adult Fitness class is offered as an upper year course, students have already acquired a working acquaintance with the principles of cardiovascular physiology. Looking at the arterial wall as the final target, most students can readily grasp the operation of the various disparate risk factors in the pathogenesis of atherosclerosis. Physical Education students are already familiar with the fundamental principles of exercise testing as a monitor of physical fitness; but emphasis is laid in this section of the course upon the use of exercise as a diagnostic modality in cardiology. The differing responses to exercise between normal persons and those with heart disease is also discussed, and the relationship of these findings to exercise prescription is emphasized.

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In outlining the principles of cardiac rehabilitation, particular stress is laid upon the importance of involving the spouse at all levels of recovery and rehabilitation. In addition, we emphasize that cardiac rehabilitation is a complex medical and psychosocial undertaking, of which exercise is just a part - it is not simply an exercise program for people who happen to have heart disease.

Acceptance of this involvement of the Department of Medicine has been high and soon led to a request to offer a separate elective course in cardiac rehabilitation for selected students of Physical Education. The outline of this elective course is shown in Table II.

We initially encountered some difficulty in setting the right level of instruction for the lecture/demonstration portion of this course because of the varied backgrounds of the students. Some, for instance, had completed extra elective work in cardiovascular and respiratory physiology while others had completed only the minimal prerequisites. Others already had had extensive experience in adult fitness testing, while still others were virtual novices. The solution we found to this problem was one well-known to medical educators - simply to relate the material as directly as possible to the patients the students were seeing regularly. Some understanding of the diagnostic and therapeutic procedures has assisted the students materially in understanding what they observe in their patients during exercise sessions. All practical work involving the patient contact is done under the direct supervision of either the medical or technical staff of the University Hospital, or of the Cardiac Rehabilitation Program. Each student, in consultation with the course director, as part of her/his evaluation, is required to present a seminar on some topic related to cardiac rehabilitation. Some of these have proved to be quite ambitious indeed, and have included such reviews as "Unique Features of Ischemic Heart Disease in Women" and "The Influence of Beta Blockade on the Training Effect."

The Department of Medicine has usually offered summer employment to one of the students who has recently completed this course. Although this aspect of the program has been clearly designated as employment and not as a course of study, we have, nonetheless, tried to make it educationally worthwhile for the selected student. The outline of the summer student's duties is given in Table III.

The summer studentship has been intended as an extension of the elective course in cardiac rehabilitation, and allows the student graded responsibility in the supervision and exercise prescription of patients participating in the Cardiac Rehabilitation Program. The student is also directly involved in the exercise testing of patients both of the Division of Cardiology at the University Hospital and in the Rehabilitation Program. Since our laboratory at the University Hospital also happens to have the responsibility for 24-hour ambulatory ECG monitoring, the student may also, depending upon his/her interests, become acquainted with the technical aspects, uses and limitations of this diagnostic modality as well. The student is also encouraged to spend at least one day in the cardiac catheterization laboratory and to observe at least one coronary artery bypass grafting procedure. We have found these experiences have uniformly enhanced the students' subsequent

understanding of their patients, and of what they observe in the laboratory.

Students also participate in the management of an in-hospital, low-level exercise program which we have offered for several years to post coronary artery bypass surgery patients just prior to their discharge from hospital.

One student laid the groundwork for the information manual used by patients in our cardiac rehabilitation program - later refined and brought to publishable form by our nurse-educators.

The subsequent educational and career courses of our summer students has been most gratifying. This group of eight students has to date obtained three Master's degrees and two doctorates, with a further two Master's and one doctorate in progress. Another student is now a practicing physiotherapist. Seven of the eight are either involved in cardiac rehabilitation, some other health-care-related field, or have clearly indicated their intention of doing so.

Another student from the elective course has become a physiotherapist as well, and two co-authors of this paper are also former elective students. One of us, (R.A.F.), as part of the required course work for his doctorate, was enrolled in the cardiology course for third year medical students. Another elective student, in a somewhat surprising change of direction, is now a technician in the cardiac catheterization laboratory of the University Hospital, as well as a certificant of the American College of Sports Medicine Exercise Specialist Program!

It is, of course, uncertain whether these programs were actually an influence in the career paths of these students, whether we simply had the good fortune of selecting talented and already highly-motivated students - or a bit of both.

Relations between the College of Physical Education and Department of Medicine have not always been as cordial as they are at present. For anyone who might be contemplating programs such as we have described, there are several important caveats to be observed:

1) Easy, free and regular communication should exist between the two bodies. This is greatly facilitated by having clearly designated liaison persons at both ends of the line who enjoy a collegial working relation and in no way perceive the other as a threat. 2) Student selection is important, particularly for the elective parts of the program offered within the Department of Medicine. An intensive, medically-oriented program, such as our elective in cardiac rehabilitation, is not for every student of Physical Education, and requires genuine interest in adult fitness and recreation, a physiological orientation and a good academic record. It is thus not for the disinterested student who wants an "easy elective." The selection of students is thus done carefully. The faculty of the College of Physical Education makes the initial selection of applicants, subject to the approval of the Department of Medicine instructor, the latter virtually always granted. Using this approach, inappropriate selection of students or voluntary withdrawal in mid-course have been uncommon. 3) Level of instruction. Physical Education students will obviously not bring the same level of basic science background with them as might a medical student. We have found the best solution to this problem

is to relate the didactic material of the course as much as possible to the actual patients the students are following. 4) A final consideration is a problem that, fortunately, has proved to be only potential and never actual. Since students of Physical Education are not accustomed to handling confidential information, we have found it prudent to remind them at the beginning of the course that any patient-related information, either from the records, from discussion with the staff or other students, or from the patients themselves, is to be regarded as strictly confidential. Having said this, we have never been aware of any breach of confidentiality. In fact, it is surprising the extent to which some patients will "unload" to our elective students, despite their full awareness of the latter's status - perhaps because they are seen as less threatening than the medical or program staff.

In summary, the Department of Medicine at the University of Saskatchewan has participated in the instruction of students at the College of Physical Education in three programs over the last twelve years: 1) as part of the regular course in adult fitness, 2) an elective course in cardiac rehabilitation for selected students, and 3) a summer studentship in cardiac rehabilitation and exercise cardiology.

The curricula of these programs and possible pitfalls in their implementation have been outlined.

These programs have been seen as useful by the faculty of both sponsoring bodies and the students alike, and may have influenced career direction of a number of students.

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TABLE I Adult Fitness - Cardiac Rehabilitation Content

- Risk Factors for Ischemic Heart Disease
- Exercise in the Evaluation of Cardiac Patients
- Principles of Cardiac Rehabilitation

TABLE II Cardiac Rehab Elective - Course Content

I Lecture-Demonstrations

- Clinical Features of Ischemic Heart Disease
- Cardiovascular Pharmacology
- Special Methods of Investigation
- Principles of Patient-Family Education
- Exercise Prescription
- Patient Review (Entry & Progress)

II Practical Work

- With patients in Cardiac Rehab Program
- Exercise testing of Cardiac Patients

III Student Seminars

TABLE III Summer Studentship

- Graded leadership for Exercise classes
- Exercise testing
- Holter monitoring (optional)
- Case Presentation at Rehab. conference
- Observe cardiac cath.
- Observe CABG
- Pre-discharge CABG Exercise